Internet Display Advertising: What is Known?

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Overview

- Highlights from Past Research by Academics
  - Effects on clickthrough, awareness, and consideration
  - Effects on purchase and purchase intent

- Practical Issues for Internet Display Advertising
  - Fast progress (funnel-based metrics, targeting)
  - Challenges
    - Impressions, reach, frequency, GRPs
    - Incorporating display into mix models
    - Attribution (e.g., display versus search)

- Summary/Q&A
Modeling Click-Through

- What is the nature of click-through response to banner ads?
- Modeling approach: predict click given banner ad exposure (and no prior click)
- Data: site-centric clickstream, 8 months from 1995

Findings
- Propensity to click varies widely (baseline of .039)
- Additional ad exposures decrease click-through probabilities, but at a decreasing rate
- New visitors and less frequent visitors more likely to click on banner ads

How do web users react to and recall banner advertising?

Eye tracking study: 49 percent of banner ads “seen”; many subjects appeared to be avoiding the ads

Memory study (807 respondents) showed ads still “work”
- Strong measures for aided advertising recall (30.1%), aided brand recognition (18.5%), and unaided ad recall (11.4%)
- Change in brand awareness (pre vs post survey): 2.8%
- Repetition positively affects recognition, recall, and awareness

Implication: use traditional ad metrics, not clickthrough rate (0.7 % at the time and falling)

Using a web-survey, another study found that “perceived goal impediment” was the biggest explanatory factor in respondents’ banner ad avoidance behavior

Is Browsing Mode Relevant?

- Does goal-directed browsing versus exploratory surfing affect recall for banner advertising?

**Experimental study**
- Goal directed versus surf/exploratory manipulated by instructions to subjects
- Data from 234 student subjects

**Findings for memory measures (goal versus surf)**
- Recognition (.15 versus .50)
- Aided recall (.05 versus .22)
- Unaided recall (.02 versus .26)

Does exposure to banner ads affect subsequent page view choices made by users within a web site?

Data

- Automotive website (site-centric data from 2004)
- Exclusive (fixed placement) banner ads by 3 car makes
- Clickstream records of site visitation record ad exposure and browsing behavior (page-type choices)

Model page-view choices of users by automotive make

Findings

- 54/46 split of responsive and non-responsive visitors
- Behavior of responsive users fits “browsing mode”
- Elasticities of page-view choices for responsive users ranged from .11 to .17, depending upon the make/ad

Effects on Purchase

- Does exposure to banner advertising affect subsequent purchase behavior?
- Modeling approach: link purchase timing to previous banner ad exposure at the individual level
- Data: purchase transactions for a HBA site, cookie-level exposure data to the site’s banner advertising

Findings
- Effect of exposures is positive, with diminishing returns
- Estimated banner ad elasticity is low, .02
- Exposure to more creative executions not necessarily helpful

Effects on Purchase Intent

- Study of 2892 web display ad campaigns
  - Treatment vs. control samples, random ad serving
  - Examined effect on surveyed purchase intent (also recall)
  - Ad characteristics
    - Contextually matched
    - Intrusiveness (e.g., pop-up, take-over, auto-play video)

- Findings
  - Exposure boosts purchase intent (as well as recall)
  - Contextual targeting and intrusiveness also increase purchase intent, but their interaction is strongly negative
  - Privacy factors appear to explain the interaction (note, no interaction found for recall)

Practical Issues for Display Ads

- Basic metrics are based on data for impressions, clicks, and actions (note: analogous to paid search metrics)
  - Overall campaign
  - Display ad channels (targeting)

- Other approaches include
  - Lift from A/B tests (for CPG and online)
  - Model-based estimates (e.g., mix models)
  - Surveys (awareness, attitudinal, purchase intent)
Display Ad Campaign: Real Estate Related Service

CTR = 0.069%

CPM = Cost per 1000 impressions
CPC = Cost per click-through
CPA = Cost per Action

<table>
<thead>
<tr>
<th>Spend</th>
<th>Impressions</th>
<th>Clicks</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>$51,680</td>
<td>27,752,812</td>
<td>19,115</td>
<td>2,365</td>
</tr>
<tr>
<td>CPM</td>
<td>CPC</td>
<td>CPA</td>
<td></td>
</tr>
<tr>
<td>$1.86</td>
<td>$2.70</td>
<td>$21.85</td>
<td></td>
</tr>
</tbody>
</table>
Metrics by Display Ad Channel

Cost per Action by Display Ad Channel

- Facebook -- Search+Demos
- Facebook -- Demographics
- Major Portal Real Estate
- Behavioral Targeting

Cost per Action ($)

Facebook -- Search+Demos
Facebook -- Demographics
Major Portal Real Estate
Behavioral Targeting
Response by Ad Channel

Campaign Data for an Internet Financial Service

Elasticity = % Change Signups / % Change Impressions
Targeting with Ad Exchanges

Statistical models used to predict the expected value of an impression.

Bid higher amounts for higher expected values.

Example courtesy of x+1.

<table>
<thead>
<tr>
<th>Max Bid</th>
<th>$4.91</th>
<th>$1.53</th>
<th>$0.90</th>
<th>$0.80</th>
<th>$0.61</th>
<th>$0.54</th>
<th>$0.21</th>
<th>$0.17</th>
<th>$0.12</th>
<th>No Bid</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Adj. conversions</td>
<td>50%</td>
<td>16%</td>
<td>9%</td>
<td>8%</td>
<td>6%</td>
<td>6%</td>
<td>2%</td>
<td>2%</td>
<td>1%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Lift Metrics

- Display ad campaigns are also assessed by the lift they provide over a baseline
  - Test cell (panelists exposed)
  - Control cell (panelists not exposed, but similar to test cell in demographics and behavior)

- Nielsen study
  - 200 digital campaigns measured
  - Average sales lift 32% (consumer packaged goods)

- ComScore study
  - 139 digital campaigns
  - Average advertiser site visitation up 46%
Bringing Display into Mix Models

- Challenges of measuring an interactive versus a fixed medium
  - GRP metrics can be problematic
  - Cookie-based measures can be problematic due to blocking and deletion
  - Inventory “inflation” also noted as a concern

- Other challenges
  - Low spend/impact versus offline in a noisy world
  - Highly correlated activity variables
  - Different models give different results on the same data!
Is Display Undervalued?

- Usual practice is to “credit the last click”

- Evidence suggests display advertising can provide a boost to subsequent search activity
  - ComScore study found lift in generic search (47%) and branded search (33%)
  - WPP Group analysis reported a 32 to 51 percent lift in overall conversion when display used with search

- Should display get credit for the “assist”? If so, how?
### Display Ad “Assists”

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Last Click Conversions</th>
<th>Number of Display Ad Exposures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Winter vacation</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Winter vacation spots</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Cancun travel</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Cancun hotels</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Cancun hotel deals</td>
<td>6</td>
<td>2</td>
</tr>
</tbody>
</table>
Summary

- Academic research has investigated many of the effects of display advertising
  - Clickthrough, awareness, consideration
  - Purchase, purchase intent

- Industry practice in applying basic metrics and optimizing targeting appears to be advancing rapidly

- Issues that still need further work include
  - Measuring the media (impressions, GRPs, cookies, etc.)
  - Connecting display advertising with sales outcomes
    - Academic research to date has been very limited
    - Challenges in modeling the effects of display alongside other marketing activity and media, especially for offline sales
  - Attribution to display versus search

- Q&A and discussion
A Thank You to Industry Experts

- Dipita Chakraborty, Nielsen
- Gian Fulgoni, comScore
- Mike Hanssens, Market Share Partners and UCLA
- John Nardone, x+1
- Mike Solomon, The Search Agency
- Jennifer Zola, Mediaedge: CIA, a WPP Company
- Interactive Advertising Bureau
Thank-you!
MASB Standards Project

Measuring & Improving Return from Interactive Advertising

Bill Seely
Randy Bucklin
Interactive Project

I. Frame-Up (Emerging Issue Project Abstract)
   A. Open Debate by MASB (revisions/approval)*

II. Research
   A. What is Known/not Known/need to Know**
      1. Open Debate by MASB (revisions/approval)*
      2. Paper for Practitioners (revisions/approval)*
   B. New Learning
   C. Preliminary Summary & Conclusions

III. Review
   A. Open Debate by MASB (revisions/approval)
   B. Open Debate by MASAC (revisions/approval)
   C. Posting for Industry Feedback (revisions)

IV. Adoption or Acceptance by MASB
V. Publication
VI. Education

VII. Systematic review over time (revisions)

* Explicitly approved by majority of MASB Directors & Chair (# dissents noted in output)
** About measurement . . . for reporting, forecasting and improving return